

RECOVERY OF CATTLE FROM HUMPSORE BY TOPICAL APPLICATION OF A FORMULATED OINTMENT

Shibabrata Pattanayak

Abstract: Humpsore is a cutaneous form of stephanofilarosis which is having no low cost treatment for complete cure. Some herbal ointments, antibacterial agent- Povidone iodine, anti-nematodal drug- Levamisole are used in a trial in different combinations and compared with the topical application of formulated ointment which contains diethyl carbamazin citrate powder, levamisole powder, sublimated sulphur powder and boric acid powder in semisolid paraffin base. Recurrence of the symptoms seen in all the trials, except in the cases treated by the formulated ointment. Symptoms recurred in only one case out of thirty six cases treated by the ointment afterwards and that case was also cured by the repetition of the same treatment.

Keywords: Humpsore. Diethyl carbamazin citrate, Levamisole.

Introduction

Humpsore, a common disease of cattle, is manifested by chronic lesions on the hump which frequently damages when cattle rub against the rough objects. The disease is characterised by a sore of generally 3-15 cm. diameter. In the sore, initially small papules arise which later coalesce to form itchy lesions. Then dried exudates of the hairless area forms a thick, crumbly scab which may crack with the appearance of blood stained moisture in the crack (Blood et.al, 1985).

Humpsore of cattle in India is caused by a microfilariae, *Stephanofilaria assamensis*. In buffalo, *Stephanofilaria zaheeri* causes dermatitis around and inside the ears, referred to as “ear sore” or contagious otorrhoea. *Musca conducens*, a biting fly, is the known insect vector of *S. assamensis*. They deposit the microfilaria on abraded skin which causes the disease. Similar types of disease are found in goat and some other species of animals in many countries (Soulsby, 1982).

The treatment of cutaneous stephanofilarosis in the field is traditionally done by the parenteral use of costly drug Ivermectin or Levamisole with local use of antiseptic cream. Many herbal ointments are also available in the market for that purpose. Partial cure of the sore is achieved in such treatments, but recurrence of the disease is seen after a few days. Present study was conducted to find a low cost ointment for complete cure of the disease.

*Assistant Director, ARD (Microbiology),
Institute of Animal Health & Veterinary Biologicals (R&T),
Kolkata 700036, West Bengal, India.
E-mail: dr.pattanayak@yahoo.co.in

Materials and methods

Present study was performed with four alternatives:

1. Povidone iodine solution (5% w/v) used for washing of the affected area once daily in the morning and 10% ointment of Levamisole powder (30% w/v) in semisolid paraffin base applied twice daily for thirty days.

2. Topical application of the combination of common herbal ointment and Levamisole powder (30% w/v) at 9:1 ratio for 30 days.

Three herbal Veterinary ointments commonly available in the market were used in the trial separately.

3. Single deep intramuscular injection of injectable Levamisole (183 mg/ml) at the dose of one ml per thirty five kg. body weight at the beginning and local application of 10% ointment of Levamisole powder (30% w/v) in semisolid paraffin base twice daily for thirty days.

4. Treatment only by the ointment of following formulation:

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| a) Powder prepared from | |
| Diethyl carbamazine citrate tablet (100 mg) | 15 tablets |
| b) Levamisole powder (30% w/v) | 10 gms |
| c) Sublimated sulphur powder | 5 gms |
| d) Boric acid powder | 10 gms |
| e) Semisolid paraffin | 100 gms |
| (Used as the base of the ointment) | |

A thin layer of the ointment was applied on the affected area twice daily, morning and afternoon for twenty days.

Three ailing animals were used in each trial. Procurement of medicines and chemicals was performed personally and animal trial was performed through the personal contact with the farmers.

Result

In all the cases where the treatment was performed following the procedures of serial no. 1,2, and 3, the sore cured partially and the affected area remained hairless. The sore reappeared within fifteen days after withdrawal of the treatment. But in the cases where treatment was done by the formulated ointment, the disease cured within ten days in most of the cases. It took a longer time up to twenty days in some very old cases. In all the cases, cost of total course of treatment was only 20-25 rupees. After getting success by the formulated ointment, 36 no. of cases were treated by that ointment. The symptoms reappeared only in one case out of those thirty six cases treated. That case was again treated at the same manner and recurrence of the

symptoms was not seen afterwards. Cure of the disease was felt by observing the formation of new hairs at the affected area, leaving only a very small scar at the centre.

Discussion

The drugs used to prepare the ointment of trial number 4 are diethyl carbamazin citrate, levamisole, boric acid and sublimated sulphur powder. Diethyl carbamazin citrate is a piperazine derivative having the chemical name, 1-diethyl carbamoyl 4 methyl piperazine citrate (Mayer Jones *et.al* 1985). It is a killer of filarial nematode and is used orally to treat human filariasis, but the mechanism of action of that drug is not properly understood (Harrison 1998). The *levo*-isomer of *dl* tetramisole is levamisole, which is a very good anti-nematodal drug for its broad range of activity on nematodes of lungs and gastrointestinal tract and can be administered orally and parenterally in a large number of species of animals. Levamisole has a paralysing effect on nematodes. The paralysing action of levamisole on helminths is related to interference with the worm's energy supply. This blocks the metabolic pathway responsible for formation of Adenosin Tri Phosphate (A.T.P.). The blockage occurs at the site of fumerate reduction and succinate oxidation. Since ATP is the form in which cellular energy is stored, the lack of production of ATP and consequent interference with normal activity of cells of the worms result in paralysis of the worm (Blood *et. al* 1985).

The mode of action of diethyl carbamazin citrate and levamisole suggest that both of them may have good detrimental action on the filarial nematodes even at local application, like proven oral or parenteral use. It is observed from the experiment that diethyl carbamazine can cure the disease when used with levamisole, where levamisole alone fails. This may be due to a better localised action or tissue binding property of any or both of the combined drugs or any synergistic action of the drugs.

Boric acid and sublimated sulphur may act as antibacterial agent in the ointment. They may help in scar healing by preventing the secondary bacterial infections. The ointment itself acts as a physico-chemical barrier for flies that sit and deposit new nematode on the affected area during treatment.

It is observed that complete cure can be achieved by the continuous use of ointment upto the formation of new hairs on the spot after healing of the sore. Only a very small scar is left afterwards. The only case of recurrence was possibly due to interrupted or improper use of the ointment. It requires further study in details to reveal the actual mode of action of drugs of the ointment when used topically together.

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